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EXAMINER	
THOMPSON, JAMES A	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/667,900	PINARD ET AL.	
	Examiner	Art Unit	
	James A Thompson	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-41 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-41 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 22 September 2000 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

Claim Rejections – 35 USC §112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 24 and 32 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 24 and 32 are apparatus claims which disclose "lightening logic" but fail to provide a structural embodiment for said lightening logic. Lightening logic itself is simply an algorithm. In order for said lightening logic to be enabled in an apparatus, said lightening logic must be embodied in some physical form as part of the apparatus.

4. Claim 40 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not

described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 40 is an apparatus claim which discloses "altering logic" but fails to provide a structural embodiment for said altering logic. Altering logic itself is simply an algorithm. In order for said altering logic to be enabled in an apparatus, said altering logic must be embodied in some physical form as part of the apparatus.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 24 and 32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 24 and 32 are apparatus claims which disclose "lightening logic" but fail to provide a structural embodiment for said lightening logic. Therefore, the means by which said lightening logic is to be performed is indefinite.

7. Claim 40 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 40 is an apparatus claims which disclose "altering logic" but fails to provide a structural embodiment for said altering logic. Therefore, the means by which said altering logic is to be performed is indefinite.

Claim Rejections – 35 USC §102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1, 3, 7-8, 16-18, 26, 32-38 and 40-41 are rejected under 35 U.S.C. 102(b) as being anticipated by Spence (US Patent 5,333,069).

Claim 1 discloses a proof generation method. Claim 17 discloses a proof generation apparatus comprising particular elements. Claim 18 discloses a proof generation apparatus comprising particular means. The apparatus of claim 18 performs the method of claim 1. Most of the particular elements which comprise the apparatus of claim 17 are similar to and provide most of the particular means for the apparatus of claim 18. The similar elements of claims 17 and 18 (along with the associated method steps of claim 1) are therefore discussed together. The dissimilar elements of claims 17 and 18 (along with the associated method step of claim 1) are further discussed separately.

Claim 26 discloses a proof generation method. Claim 32 discloses a proof generation apparatus comprising particular elements. Claim 33 discloses a proof generation apparatus comprising particular means. The apparatus of claim 33 performs the method of claim 26. Most of the particular elements which comprise the apparatus of claim 32 are similar to and provide most of the particular means for the apparatus of claim 33. The similar elements of claims 32 and 33 (along with the associated method

steps of claim 26) are therefore discussed together. The dissimilar elements of claims 32 and 33 (along with the associated method step of claim 26) are further discussed separately.

Claim 34 discloses a proof generation method. Claim 40 discloses a proof generation apparatus comprising particular elements. Claim 41 discloses a proof generation apparatus comprising particular means. The apparatus of claim 41 performs the method of claim 34. Most of the particular elements which comprise the apparatus of claim 40 are similar to and provide most of the particular means for the apparatus of claim 41. The similar elements of claims 40 and 41 (along with the associated method steps of claim 34) are therefore discussed together. The dissimilar elements of claims 40 and 41 (along with the associated method step of claim 34) are further discussed separately.

Regarding claims 1, 17 and 18: Spence discloses a proof generation apparatus for proof printers (figure 1 of Spence). Said apparatus comprises a print data input (figure 1(100→110) of Spence) responsive to a first halftone processor (figure 1(110) of Spence) employing a first halftoning technique (column 13, lines 31-35 of Spence), wherein the first halftoning technique is at least comparable to a target halftoning technique used by the target halftone printing press (figure 1(168) of Spence) (column 13, lines 35-38 and lines 42-45 of Spence). The set of digital color separations (figure 1(110) of Spence) is a halftone technique since the color separated data is used directly in direct digital color proofing (column 13, lines 35-39 and lines 42-45 of Spence). Said digital color separations are used in forming the set of halftone

separations (figure 1(120) of Spence) (column 13, lines 42-45 of Spence), so said digital color separations is at least comparable to said halftone separations.

Said apparatus further comprises a second halftone processor (figure 1(120) of Spence) employing a second halftone technique (column 13, lines 42-50 of Spence), wherein the first and second halftoning techniques are different (column 13, lines 45-54 of Spence). Since said halftone separations, which are formed by what is essentially the second halftoning technique, are used for a different printing system (figure 1(160) of Spence) than said digital color separations (column 13, lines 45-50 of Spence), then said second halftoning technique must inherently be different from the first halftoning technique.

Further regarding claims 1 and 18: Spence discloses that said apparatus further comprises means (figure 1(110) of Spence) for providing the data to a proofing printer (figure 1(140) of Spence) different from the target halftone printing press (figure 1(168) of Spence). Said target halftone printing press uses a separate halftoning technique to form image data and a set of printing plates (column 13, lines 45-50 of Spence) in order to form the printed images (column 13, lines 50-54 of Spence). Said proofing printer uses a direct digital color proofing method (column 13, lines 42-43 of Spence). Therefore, said printing proofer and said target halftone printing press are different.

Further regarding claim 17: Spence discloses that said apparatus further comprises a processed print data output (figure 1(153) of Spence) (column 14, lines 32-40 of Spence).

Regarding claims 26, 32 and 33: Spence discloses a proof generation apparatus for proof printers (figure 1 of Spence). Said apparatus comprises a print data input (figure 1(100→110) of Spence) responsive to a first halftone processor (figure 1(110) of Spence) employing a first halftone technique (column 13, lines 31-35 of Spence), wherein the first halftoning technique is at least comparable to a target halftoning technique used by the target halftone printing press (figure 1(168) of Spence) (column 13, lines 35-38 and lines 42-45 of Spence). The set of digital color separations (figure 1(110) of Spence) is a halftone technique since the color separated data is used directly in direct digital color proofing (column 13, lines 35-39 and lines 42-45 of Spence). Said digital color separations are used in forming the set of halftone separations (figure 1(120) of Spence) (column 13, lines 42-45 of Spence), so said digital color separations is at least comparable to said halftone separations.

Said apparatus further comprises lightening logic (figure 3(320 (associated embodied code)) of Spence) for lightening at least one portion of each of at least some of the screen dots (column 19, lines 3-6 of Spence). Since the appearance match proofer calibration system (figure 1(180) of Spence) matches for the lightness coordinate of the image (column 19, lines 3-6 of Spence), then in general said calibration system will lighten at least one portion of each of at least some of the screen dots.

Said apparatus further comprises an adder (figure 3(320 (associated embodied code)) of Spence) for adding at least one region of a second color in some of the screen dots (column 19, lines 6-9 of Spence). Since said calibration system matches for the

hue angle (column 19, lines 6-9 of Spence), at least one region of a second color will be added in some of the screen dots in order to correct the hue of the proofing image.

In order to perform image processing functions, a computer (figure 3(320) of Spence) must inherently comprise some form of software code embodied on some form of computer-readable medium. The lightening logic is the software code, embodied on a computer-readable medium, that performs the lightening. The adder is the software code, embodied on a computer-readable medium, that performs the adding. Said lightening logic and said adder are therefore separate and distinct components.

Further regarding claims 26 and 33: Spence discloses that said apparatus further comprises means (figure 1(110) of Spence) for providing the screen image data to a proofing printer (figure 1(140) of Spence) different from the target halftone printing press (figure 1(168) of Spence). Said target halftone printing press uses a separate halftoning technique to form image data and a set of printing plates (column 13, lines 45-50 of Spence) in order to form the printed images (column 13, lines 50-54 of Spence). Said proofing printer uses a direct digital color proofing method (column 13, lines 42-43 of Spence). Therefore, said printing proofer and said target halftone printing press are different.

Further regarding claim 32: Spence discloses that said apparatus further comprises a processed print data output (figure 1(153) of Spence) (column 14, lines 32-40 of Spence).

Regarding claims 34, 40 and 41: Spence discloses a proof generation apparatus for proof printers (figure 1 of Spence). Said apparatus comprises a print data

input (figure 1(100→110) of Spence) responsive to a first halftone processor (figure 1(110) of Spence) employing a first halftone technique (column 13, lines 31-35 of Spence), wherein the first halftoning technique is at least comparable to a target halftoning technique used by the target halftone printing press (figure 1(168) of Spence) (column 13, lines 35-38 and lines 42-45 of Spence). The set of digital color separations (figure 1(110) of Spence) is a halftone technique since the color separated data is used directly in direct digital color proofing (column 13, lines 35-39 and lines 42-45 of Spence). Said digital color separations are used in forming the set of halftone separations (figure 1(120) of Spence) (column 13, lines 42-45 of Spence), so said digital color separations is at least comparable to said halftone separations.

Said apparatus further comprises altering logic (figure 1(180) of Spence) for altering at least a plurality of areas distributed within at least some of the dots with substantially the same color alteration (column 19, lines 3-9 of Spence). By matching the hue angle, instead of the individual hues of individual dots, in different regions of the image (column 19, lines 3-9 of Spence), a plurality of areas are altered within at least some of the dots with substantially the same color alteration.

Further regarding claim 40: Spence discloses that said apparatus further comprises a processed print data output (figure 1(153) of Spence) (column 14, lines 32-40 of Spence).

Further regarding claims 34 and 40: Spence discloses that said apparatus further comprises means (figure 1(110) of Spence) for providing the data to a proofing printer (figure 1(140) of Spence) different from the target halftone printing press (figure

1(168) of Spence). Said target halftone printing press uses a separate halftoning technique to form image data and a set of printing plates (column 13, lines 45-50 of Spence) in order to form the printed images (column 13, lines 50-54 of Spence). Said proofing printer uses a direct digital color proofing method (column 13, lines 42-43 of Spence). Therefore, said printing proofer and said target halftone printing press are different.

Regarding claim 3: Spence discloses that the print data are color print data (column 13, lines 39-41 of Spence) including a plurality of color-separated data subsets (column 13, lines 39-45 of Spence) and wherein the step of applying a first halftoning technique and the step of applying a second halftoning technique are applied to the data subsets (column 13, lines 42-45 of Spence).

Regarding claim 7: Spence discloses the steps of receiving a target printing press selection command (column 25, line 67 to column 26, line 4 of Spence) and selecting parameters for the second halftoning technique based on the target printing press selection command (column 26, lines 5-10 of Spence). The colorimetric data for the target image is obtained and managed by the user (column 26, lines 2-4 of Spence) which works in conjunction with a selection of the target printing press (column 26, lines 4-5 of Spence). The colorimetric and densitometric data for proofing is also managed by the user (column 26, lines 5-10 of Spence). Management of the colorimetric and densitometric data inherently includes selecting parameters for the second halftoning technique since said second halftoning technique is needed to make a proof and the target image (column 13, lines 45-54 of Spence).

Regarding claim 8: Spence discloses applying a first halftoning technique and applying a second halftoning technique are applied as part of a single simultaneous process (column 13, lines 42-45 of Spence). The digital separation processing (figure 1(110) of Spence) is used to produce the set of halftone separations (figure 1(120) of Spence) for the printing press (figure 1(168) of Spence) (column 13, lines 42-45 of Spence). Both said digital separation processing and said halftone separation processing are inherently performed pixel-by-pixel. Once the digital separation pixel is calculated, the halftone pixel can be calculated before the result is sent to the target printer (column 13, lines 45-54 of Spence). Therefore, the first and second halftoning techniques are applied as part of a single simultaneous process.

Regarding claim 16: Spence discloses that the step of applying a first halftoning technique employs dots (column 13, lines 16-19 of Spence) and wherein the step of applying is applied to the dots corresponding to a spot color defined by the print data to match the spot color (column 13, lines 39-41 of Spence). In order to print the digital separation data (column 13, lines 16-19 of Spence), said first halftoning technique must inherently employ spots of some form. Since the digital separation data comprises a plurality of primary colors (column 13, lines 39-41 of Spence), the dots must inherently correspond to a spot color defined by the print data to match the spot color if the image is to be faithfully reproduced.

Regarding claim 35: Spence discloses that the step of altering alters the areas to include a same color that is different from the color of the dot (figure 2 and column 19, lines 6-9 and lines 18-23 of Spence). By adjusting the hue angle to create an

appearance match (column 19, lines 6-9 of Spence), areas are altered to a same color that is different from the color of the dot (column 19, lines 18-23 of Spence).

Regarding claim 36: Spence discloses that the step of altering operates according to a set of primary colors (column 19, lines 3-4 of Spence). Said set of primary colors are adjusted to make highlights appear bright (column 19, lines 9-13 of Spence). In order to adjust a set of primary color to make highlights appear bright, a first color would have to be altered by a second color in favor of a decrease in the altering of the first color by a third color that is darker than the second color. Such an adjustment would inherently increase the lightness of the highlight portion of the image.

Regarding claim 37: Spence discloses that the step of altering alters the areas to lighten the color of the dot (column 19, lines 3-6 of Spence). By altering the lightness of the image data (column 19, lines 3-6 of Spence) to match the print data (column 19, lines 9-13 of Spence), the color of the dots of some areas will be lightened.

Regarding claim 38: Spence discloses that the step of altering alters dots corresponding to a spot color defined by the print data to match the spot color (column 19, lines 3-9 of Spence). By modifying the hue angle (column 19, lines 6-9 of Spence) to match the print data (column 19, lines 13-17 of Spence), dots corresponding to a spot color defined by the print data will be altered to match the spot color.

Claim Rejections – 35 USC §103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 2, 4, 9-15, 19-25, 28-31 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spence (US Patent 5,333,069) in view of Vinck (US Patent 5,953,988).

Claim 19 discloses a proof generation method. Claim 24 discloses a proof generation apparatus comprising particular elements. Claim 25 discloses a proof generation apparatus comprising particular means. The apparatus of claim 24 performs the method of claim 19. The particular elements which comprise the apparatus of claim 24 provide the particular means which comprise the apparatus of claim 25. Claims 19, 24 and 25 are therefore discussed together.

Claims 9, 28 and 39 further limit claims 1, 26 and 34, respectively. Claims 9, 28 and 39 disclose the same limitations. Therefore, claims 9, 28 and 39 are discussed together.

Claims 11 and 29 further limit claims 1 and 26, respectively. Claims 11 and 29 disclose the same limitation. Therefore, claims 11 and 29 are discussed together.

Claims 14 and 31 further limit claims 1 and 26, respectively. Claims 14 and 31 disclose the same limitation. Therefore, claims 14 and 31 are discussed together.

Regarding claims 19, 24 and 25: Spence discloses a proof generation apparatus for proof printers (figure 1 of Spence). Said apparatus comprises a print data input (figure 1(100→110) of Spence) responsive to a series of screen dots from first halftone processor (figure 1(110) of Spence) employing a first halftoning technique

(column 13, lines 31-39 of Spence), wherein the plurality of dots yield a shaded visual representation of the image when printed on a printing press (column 19, lines 9-13 of Spence). When the plurality of dots initially created by the first halftoning technique (column 13, lines 31-39 of Spence) are printed on the printing press, the highlights are bright and the shadows are dark (column 19, lines 9-13 of Spence), thus creating a shaded visual representation.

Said apparatus further comprises lightening logic (figure 1(180) of Spence) for creating one or more lightened areas where direct deposition of colorant is to be lightened within at least some of the screen dots to be printed (column 19, lines 3-6 and lines 9-13 of Spence) but where indirect deposition colorant from overlapping areas is to remain (column 19, lines 11-12 of Spence), and wherein the apparatus is optimized to accurately reproduce a shaded visual image that would be printed on the printing press (column 19, lines 3-9 of Spence). Matching for a lightness value (column 19, lines 3-6 of Spence) is used to preserve the overall contrast (column 19, lines 9-13 of Spence), which would generally require the lightening of at least some of the screen dots to be printed. The highlight regions are made to appear bright in order to maintain the contrast of the original image (column 19, lines 9-13 of Spence). Therefore, the direct deposition of colorant is lightened. A shadow region inherently has overlapping halftone dots due to the high density level of said shadow region. The shadow regions are made to appear dark in order to maintain the contrast of the original image (column 19, lines 9-13 of Spence). Therefore, the indirect deposition of colorant from overlapping areas is to remain.

Said apparatus further comprises a processed print data output for providing the data to a proofing printer different from the target halftone printing press (figure 1(153) of Spence) (column 14, lines 32-40 of Spence) and capable of printing the overlapping areas (column 19, lines 3-12 of Spence).

Spence does not disclose expressly that said proof printers are ink jet printers.

Vinck discloses the use of ink jet printers (column 6, lines 22-26 of Vinck).

Spence and Vinck are combinable because they are from the same field of endeavor, namely halftone processing of image data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use an ink jet printer for a proofing printer. The motivation for doing so would have been that ink jet printers are an alternative way to image halftone dots (column 6, lines 22-24 of Vinck). Therefore, it would have been obvious to combine Vinck with Spence to obtain the invention as specified in claims 19, 24 and 25.

Regarding claim 2: Spence discloses printing using a first halftone technique (column 13, lines 31-35 of Spence) and a second halftone technique (column 13, lines 42-50 of Spence).

Spence does not disclose expressly that said first halftoning technique applies a halftoning technique that employs constantly spaced dots of variable sizes and said second halftoning technique applies a stochastic halftoning technique to the constantly spaced dots of variable sizes.

Vinck discloses a halftoning technique that employs constantly spaced dots of variable sizes (figure 2(24) and column 4, lines 47-49 of Vinck) and a stochastic

halftoning technique (figure 2(25) and column 4, lines 49-50 of Vinck), wherein the dots of said stochastic halftoning technique are equally sized (column 4, lines 50-52 of Vinck).

Spence and Vinck are combinable because they are from the same field of endeavor, namely halftone processing of image data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use a halftoning technique that employs constantly spaced dots of variable size for the first halftoning technique and a stochastic halftoning technique for the second halftoning technique. The motivation for doing so would have been to create various shades of color (column 3, lines 29-37 of Vinck). Therefore, it would have been obvious to combine Vinck with Spence to obtain the invention as specified in claim 2.

Regarding claim 4: Spence discloses that the step of applying a first halftoning technique employs dots from a first set of primary colors (column 13, lines 39-41 of Spence) and the step of applying a second halftoning technique (column 13, lines 42-45 of Spence).

Spence does not disclose expressly that applying said second halftoning technique adds at least a second of the primary colors to a portion of one or more of the dots assigned to a first of the primary colors based on the first halftoning technique.

Vinck discloses that said first halftoning technique employs constantly spaced dots of variable sizes (figure 2(24) and column 4, lines 47-49 of Vinck) and said second halftoning technique is a stochastic halftoning technique (figure 2(25) and column 4, lines 49-50 of Vinck), the dots of said stochastic halftoning technique being of equal size

(column 4, lines 50-52 of Vinck). Said first halftoning screen and said second halftoning screen both use sets of primary colors (column 5, lines 16-19 of Vinck). With a constantly spaced halftoning screen with dots of variable sizes used in conjunction with a stochastic halftoning screen with dots of equal size, dots of different primary colors will inherently overlap each other in some areas of the image. Therefore, at least a second of the primary colors is added to a portion of one or more of the dots assigned to a first of the primary colors based on the first halftoning technique.

Spence and Vinck are combinable because they are from the same field of endeavor, namely halftone processing of image data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use two different halftone screens to add primary colors from the second halftone screen to a portion of a primary color of the first halftone screen. The motivation for doing so would have been to extend the printable color gamut (column 5, lines 22-24 of Vinck). Therefore, it would have been obvious to combine Vinck with Spence to obtain the invention as specified in claim 4.

Regarding claims 9, 28 and 39: Spence discloses the step of printing the data with a proofing printer different from the target halftone printing press (figure 1(153) of Spence) (column 14, lines 32-40 of Spence).

Spence does not disclose expressly that said proofing printer is an ink jet printer.

Vinck discloses the use of ink jet printers (column 6, lines 22-26 of Vinck).

Spence and Vinck are combinable because they are from the same field of endeavor, namely halftone processing of image data. At the time of the invention, it

would have been obvious to a person of ordinary skill in the art to use an ink jet printer for a proofing printer. The motivation for doing so would have been that ink jet printers are an alternative way to image halftone dots (column 6, lines 22-24 of Vinck). Therefore, it would have been obvious to combine Vinck with Spence to obtain the invention as specified in claims 9, 28 and 39.

Regarding claim 10: Said first halftoning technique employs constantly spaced dots of variable sizes and said second halftoning technique is a stochastic halftoning technique, the dots of said stochastic halftoning technique being of equal size, as discussed in the arguments regarding claim 2 which are incorporated herein.

In a stochastic halftoning technique, the areas in which ink is not printed will inherently overlap the areas in which ink is printed in a halftoning technique that employs constantly spaced dots of variable sizes, as can be seen by comparing the halftone patterns of figure 2(24) and figure 2(25) of Vinck. Preventing the printing of ink will therefore inherently lighten colorant values for at least some areas of at least some of the dots from said first halftoning technique.

Regarding claim 11 and 29: Said first halftoning technique employs constantly spaced dots of variable sizes and said second halftoning technique is a stochastic halftoning technique, the dots of said stochastic halftoning technique being of equal size, as discussed in the arguments regarding claim 2 which are incorporated herein.

In a stochastic halftoning technique, the areas in which ink is not printed will inherently overlap the areas in which ink is printed in a halftoning technique that employs constantly spaced dots of variable sizes, as can be seen by comparing the

halftone patterns of figure 2(24) and figure 2(25) of Vinck. At a certain grayscale level, the size of the area in which ink is not printed in the stochastic halftone screen is the same as the size of the area that is printed in the constantly spaced halftone screen. Preventing the printing of ink for said certain grayscale level (the particular level depending on the size of the stochastic halftone dots) will therefore inherently completely lighten colorant values for at least some areas of at least some of the dots from said first halftoning technique.

Regarding claim 12: Said first halftoning technique employs constantly spaced dots of variable sizes and said second halftoning technique is a stochastic halftoning technique, the dots of said stochastic halftoning technique being of equal size, as discussed in the arguments regarding claim 2 which are incorporated herein. Both halftoning techniques use sets of primary colors (column 13, lines 39-41 of Spence).

Since the dot sizes for the constantly spaced halftone screen are variable and the dot sizes for the stochastic halftone screen are constant, at a particular grayscale level for each color, said grayscale level depending on the size of the dots of said stochastic halftoning technique, no printing will occur in an area for one primary color of the first halftone screen and printing will occur in the same area for another primary color of the second halftone screen, thus substituting the colors. The area in which nothing is printed for the first halftone screen will coincide with and be equal to the area in which a dot is printed for the second halftone screen. Therefore, applying said second halftoning technique to said first halftoning technique will inherently cause the

substitution of colorant from at least some areas of at least some of the dots from the first halftoning technique with a different colorant.

Regarding claims 13 and 30: Said first halftoning technique employs constantly spaced dots of variable sizes and said second halftoning technique is a stochastic halftoning technique, the dots of said stochastic halftoning technique being of equal size, as discussed in the arguments regarding claim 2 which are incorporated herein. Both halftoning techniques use sets of primary colors (column 13, lines 39-41 of Spence).

Since the dot sizes for the constantly spaced halftone screen are variable and the dot sizes for the stochastic halftone screen are constant, printing of different colors will inherently overlap from both halftoning screens. This will inherently cause an overlaying of a different colorant on at least some areas of at least some of the dots from the first halftoning technique.

Regarding claims 14 and 31: Said first halftoning technique employs constantly spaced dots of variable sizes and said second halftoning technique is a stochastic halftoning technique, the dots of said stochastic halftoning technique being of equal size, as discussed in the arguments regarding claim 2 which are incorporated herein. Both halftoning techniques use sets of primary colors (column 13, lines 39-41 of Spence).

Since the dot sizes for the constantly spaced halftone screen are variable and the dot sizes for the stochastic halftone screen are constant, at a particular grayscale level for each color, said grayscale level depending on the size of the dots of said

stochastic halftoning technique, printing will inherently overlap for at least some of the same areas for both halftoning screens. Even if the dots from each halftoning screen are of different primary colors, the resultant color will be uniform. Said overlapping will therefore inherently cause the creation of a plurality of areas of a same color within at least some of the dots from said first halftoning technique.

Regarding claim 15: Said first halftoning technique employs constantly spaced dots of variable sizes and said second halftoning technique is a stochastic halftoning technique, the dots of said stochastic halftoning technique being of equal size, as discussed in the arguments regarding claim 2 which are incorporated herein. Both halftoning techniques use sets of primary colors (column 13, lines 39-41 of Spence).

Color halftoning inherently creates a plurality of areas as individual pixels since color halftoning uses a plurality of dots at specific locations to represent an image. Therefore, applying said first halftoning technique and said second halftoning technique inherently causes the creation of a plurality of areas as individual pixels.

Regarding claim 20: Spence discloses a step of receiving an adjustment signal (column 25, lines 50-54 of Spence) and a step of adjusting parameters of the step of lightening in response to the step of receiving a user adjustment signal (column 26, lines 5-10 of Spence). The user controls colorimetric and densitometric data for the proof image (column 26, lines 5-10 of Spence). Said user control would inherently include, either through direct manipulation or manipulation of related factors, the adjustment of the lightening.

Regarding claim 21: Spence discloses printing the data using a proofing printer (figure 1(140) of Spence) different from the target halftone printing press (figure 1(168) of Spence). Said target halftone printing press uses a separate halftoning technique to form image data and a set of printing plates (column 13, lines 45-50 of Spence) in order to form the printed images (column 13, lines 50-54 of Spence). Said proofing printer uses a direct digital color proofing method (column 13, lines 42-43 of Spence). Therefore, said printing proofer and said target halftone printing press are different.

Spence does not disclose expressly that the data is printed with overlapping dots for the overlapping raster pattern and that said proofing printer is an ink jet proofing printer.

Vinck discloses printing data with overlapping dots for the overlapping raster pattern (figure 4 of Vinck) (column 5, lines 30-33 of Vinck). Vinck further discloses the use of ink jet printers (column 6, lines 22-26 of Vinck).

Spence and Vinck are combinable because they are from the same field of endeavor, namely halftone processing of image data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to print the data with overlapping dots for an overlapping raster pattern, using an ink jet printer for a proofing printer. The motivation for doing so would have been to extend the printable color gamut (column 5, lines 22-24 of Vinck) and that ink jet printers are an alternative way to image halftone dots (column 6, lines 22-24 of Vinck). Therefore, it would have been obvious to combine Vinck with Spence to obtain the invention as specified in claim 21.

Regarding claim 22: Spence discloses that the lightness of the image is matched (column 19, lines 3-6 and lines 9-13 of Spence), thus creating some areas that are lightened, such as highlight areas (column 19, lines 9-13 of Spence). Therefore, the individual pixels must inherently be processed in order to match the lightness. Thus, the step of creating creates the lightened areas as individual pixels.

Regarding claim 23: Spence discloses the steps of creating (column 19, lines 3-6 and lines 9-13 of Spence) and providing (column 14, lines 32-40 of Spence), as defined in the arguments regarding claim 19, upon which claim 21 is dependent.

Spence does not disclose expressly that the steps of creating and providing are adapted to produce complete overlap of the lightened areas.

Vinck discloses that when a dot (figure 3(26) of Vinck) overlaps a screen cell (figure 3(28) of Vinck), the screen cell is blocked and will not transmit any ink (column 4, lines 56-61 of Vinck). The blockage of said screen cell therefore essentially produces a lightening effect since cells that would saturate the paper with ink are turned off. Further, as can clearly be seen in figure 3 of Vinck, the radius of the ink dot (Dmin), used for all of the screen cells in figure 3 that are not overlapped by the screen cell specifically shown as being activated (figure 3(27) of Vinck), the lightened region will be completely overlapped.

Spence and Vinck are combinable because they are from the same field of endeavor, namely halftone processing of image data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to turn of the screen cells that are overlapped with other cells, thus lightening the saturated portions of the

image while completely overlapping said saturated portions. The motivation for doing so would have been to save ink since ink does not need to be transmitted through a cell when ink is already overlapping the cell. Therefore, it would have been obvious to combine Vinck with Spence to obtain the invention as specified in claim 23.

12. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spence (US Patent 5,333,069) in view of Vinck (US Patent 5,953,988) and Gondek (US Patent 5,949,965).

Claims 5 and 6 further limit claims 4 and 3, respectively. Claims 5 and 6 disclose the same limitations. Therefore, claims 5 and 6 are discussed together.

Regarding claims 5 and 6: Spence discloses the step of applying a first halftoning technique (figure 1(110) of Spence) that employs dots from a first set of primary colors (column 13, lines 39-45 of Spence) and the step of applying a second halftoning technique (figure 1(120) and column 13, lines 35-39 of Spence).

Spence does not disclose expressly that the step of applying said second halftoning technique adds at least a first additional color to a portion of one or more of the dots assigned to a first of the primary colors based on the first halftoning technique.

Vinck discloses applying a halftone screen with constantly spaced, variable sized dots (figure 2(24) of Vinck) and a stochastic halftone screen (figure 2(25) of Vinck) with constant sized dots (column 4, lines 46-54 of Vinck).

Spence and Vinck are combinable because they are from the same field of endeavor, namely halftone processing of image data. At the time of the invention, it

would have been obvious to a person of ordinary skill in the art to use halftone screen with constantly spaced, variable sized dots for the first halftoning technique and the stochastic halftone screen for the second halftone technique. The motivation for doing so would have been to extend the printable color gamut (column 5, lines 22-24 of Vinck). Therefore, it would have been obvious to combine Vinck with Spence.

With a constantly spaced halftoning screen with dots of variable sizes used in conjunction with a stochastic halftoning screen with dots of equal size, dots of different primary colors will inherently overlap each other in some areas of the image. Therefore, at least one color will be added to a portion of one or more of the dots assigned to a first of the primary colors based on the first halftoning technique.

Spence in view of Vinck does not disclose expressly that said one color that will be added is an additional color that will added to a first of the primary colors based on the first halftoning technique.

Gondek discloses printing additional color planes as part of the available color palette (column 7, lines 1-4 of Gondek).

Spence in view of Vinck is combinable with Gondek because they are from the same field of endeavor, namely halftone printing and image processing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include an additional color as part of the color palette for the second halftoning technique. The motivation for doing so would have been to have more colors with which to reproduce a desired tone (column 7, lines 1-4 of Gondek). Therefore, it would

have been obvious to combine Gondek with Spence in view of Vinck to obtain the invention as specified in claims 5 and 6.

13. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Spence (US Patent 5,333,069).

Regarding claim 27: Spence discloses the step of applying a first halftoning technique (column 13, lines 31-35 of Spence), the step of lightening (column 19, lines 3-6 of Spence), and the step of adding (column 19, lines 6-9 of Spence), said lightening being performed by lightness matching (column 19, lines 3-6 of Spence) and said adding being done by adding colors through hue matching (column 19, lines 6-9 of Spence).

Spence does not disclose expressly that said first halftoning technique, said step of lightening, and said step of adding are applied as part of a single simultaneous process before the step of providing.

To a person of ordinary skill in the art at the time of the invention, it would have been an obvious design choice to perform the aforementioned steps of applying, lightening and adding as part of a single simultaneous process since performing said steps simultaneously would increase the efficiency with which the halftone image data is processed. The processes of applying, lightening and adding are performed on each pixel of the image data as part of an overall printing and proofing process. It would therefore be obvious to perform the steps of applying, lightening and adding simultaneously and thus increase the efficiency of the printing and proofing process.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

William R. Hardin, US Patent 5,585,841, December 17, 1996.

Usami et al., US Patent 5,781,709, July 14, 1998.

Shiomi et al., US Patent 5,541,743, July 30, 1996.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A Thompson whose telephone number is 703-305-6329. The examiner can normally be reached on 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K Moore can be reached on 703-308-7452. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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James A. Thompson
Examiner
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JAT
April 12, 2004

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